

CLAIMS

What is claimed is:

- 1 1. A method of combining voice and data for transmission during a single digital
2 wireless telephone call, comprising the steps of:
3 establishing a circuit-switched data call connection from a mobile phone to a
4 destination;
5 routing the call through a pair of modems connected in-line with the call connection
6 path;
7 multiplexing non-voice digital data with vocoded voice digital data to form a
8 multiplexed digital data stream; and
9 sending the multiplexed digital data stream from the mobile phone to the destination
10 through the pair of modems.

1 2. A method of combining voice and data for transmission during a single digital
2 wireless telephone call, comprising the steps of:
3 establishing a circuit-switched data call connection from a destination to a mobile
4 phone, wherein the mobile phone is allowed to complete the call connection only if the call
5 service option specifies circuit-switched data;
6 routing the call through a pair of modems connected in-line with the call connection
7 path;
8 multiplexing non-voice digital data with vocoded voice digital data to form a
9 multiplexed digital data stream; and
10 sending the multiplexed digital data stream from the destination to the mobile phone
11 through the pair of modems.

1 3. A method of establishing a plurality of simultaneous connections between a
2 digital cellular radio and a wireless system provider, comprising the steps of:

3 establishing a voice connection between the digital cellular radio and a wireless
4 system provider; and

5 establishing a digital data connection between the digital cellular radio and a wireless
6 system provider wherein the voice connection and the digital data connection are being
7 active at the same time and treated independently by the wireless system providers.

1 4. The method of claim 3 wherein the voice connection and the digital data
2 connection are made to the same destination.

1 5. The method of claim 4 wherein the destination is an operator workstation.

1 6. The method of claim 5 where the digital data connection carries information
2 about the voice connection.

1 7. A telephone for combining voice and data into a transmitted digitized data
2 stream to be transmitted by way of a single digital wireless telephone call and for receiving a
3 received digitized data stream including received voice data and received non-voice data, the
4 telephone having a voice input, a sound output, a data input, a non-voice data output, and an
5 antenna, the telephone comprising:

6 a vocoder having an encoder including a digitized voice input and an encoded voice
7 data output, and a decoder including a received voice data input and decoded voice data
8 output;

9 a microphone operatively connected to an analog-to-digital converter which provides
10 a digitized voice data stream to the digitized voice input in response to the voice input;

11 a speaker operatively connected to a digital-to-analog converter which receives a
12 digital data stream from the vocoder decoded voice output to provide the sound output;

13 a multiplexor having a multiplexed data output, an encoded voice input, and a data
14 input, the multiplexor operatively connected to receive the encoded voice output at the
15 encoded voice input and the data at the data input so as to provide a transmitted digitized data
16 stream; and

17 a demultiplexor having a converted data input, a voice data output, and a non-voice
18 data output, the converted data input operatively connected to receive the received digitized
19 data stream, the voice data output operatively connected to provide received voice data to the
20 decoder received voice data input, and the non-voice data output operating to provide the
21 received non-voice data to the non-voice data output.

- 1 8. The telephone of Claim 7, further comprising:
2 a destination in electronic communication with the telephone.

1 9. A system for managing a combined data stream, comprising:

2 a telephone for combining voice and data into a transmitted digitized data stream to
3 be transmitted by way of a single digital wireless telephone call and for receiving a received
4 digitized data stream including received voice data and received non-voice data, the
5 telephone having a voice or sound input, a sound output, a data input, a non-voice data
6 output, and an antenna, the telephone comprising:

7 a vocoder having an encoder including a digitized voice input and an encoded voice
8 data output, and a decoder including a received voice data input and decoded voice data
9 output;

10 a microphone operatively connected to an analog-to-digital converter which provides
11 a digitized voice data stream to the digitized voice input in response to the voice or sound
12 input;

13 a speaker operatively connected to a digital-to-analog converter which receives a
14 digital data stream from the vocoder decoded voice output to provide the sound output;

15 a multiplexor having a multiplexed data output, an encoded voice input, and a data
16 input, the multiplexor operatively connected to receive the encoded voice output at the
17 encoded voice input and the data at the data input so as to provide a transmitted digitized data
18 stream; and

19 a demultiplexor having a converted data input, a voice data output, and a non-voice
20 data output, the converted data input operatively connected to receive the received digitized
21 data stream, the voice data output operatively connected to provide received voice data to the
22 decoder received voice data input, and the non-voice data output operating to provide the
23 received non-voice data to the non-voice data output; and

24 a mobile switching center including a first modem, the mobile switching center
25 operatively coupled to the telephone so as to receive a representation of the amplified output
26 data stream from the telephone and to send the representation of the amplified output data
27 stream to the first modem, and to receive a representation of the received digital data stream
28 from the first modem and to send the representation of the received digital data stream to the
29 telephone;
30 a central office connected to the first modem; and
31 a destination including a second modem connected to the central office.